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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of: CHRISTIANSEN ET AL.
Application No.: 09/097,383
Filed: June 16, 1998

Confirmation Number: 2876
Group Art Unit: 3739
Examiner: Shay, David M.

Title: LIGHT PULSE GENERATING APPARATUS AND COSMETIC AND THERAPEUTIC PHOTOTREATMENT

REQUEST FOR RECONSIDERATION

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Commissioner for Patents
P.O. Box 1450
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Sir:

In response to the Office Action dated January 16, 2004, please reconsider the patentability of the rejected claims based on the following remarks.

Claims 1 and 22 were rejected as being anticipated under 35 U.S.C. 102(b) as being clearly anticipated by Eckhouse. Claims 1-3, 22 and 23 were rejected under 35 U.S.C. 103(a) as being obvious from Eckhouse and Gustafsson. Claims 10-15, 24 and 25 were rejected under 35 U.S.C. 103(a) as being obvious from Eckhouse, Gustafsson, Anderson and Optoelectronics. Claims 10-15, 24 and 25 were rejected under 35 U.S.C. 103(a) as being obvious from Eckhouse, Gustafsson, Anderson and Optoelectronics. Claim 18 was rejected under 35 U.S.C. 103(a) as being obvious from Eckhouse, Gustafsson and Vassiliadis et al. (hereafter "Vasiliadis").

Applicant traverses the prior art rejections because no combination of the cited prior art references teaches or suggests all the features recited in the rejected claims and one of ordinary skill in the art would not have combined the teachings of the references as hypothesized by the Office Action.

No Combination of the References Teaches or Suggests All the Claimed Features

For example, no combination of the cited prior art references teaches or suggests the claimed apparatus for pulsed light cosmetic or therapeutic photo-treatment of the human or animal body, comprising a "a filter system for filtering undesired light output wavelengths

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from said pulse to produce a filtered light pulse for application to said body, at least part of said filter system being interposed between said light source and said aperture, wherein said filter system consists of (a) a filter for filtering out UV and near UV wavelengths shorter than 510 nm and for passing longer wavelengths and (b) water, said water being located in the apparatus for filtering out undesired skin heating wavelengths of light which would otherwise pass to said output aperture, wherein said filtered light pulse has an energy of at least 250 J/cm2/sec," as recited in independent claim 1 and its dependent claims.

Eckhouse

Contrary to the assertions of the Office Action, Eckhouse merely describes various embodiments, none of which including the claimed features asserted by the Office Action. Eckhouse teaches a first embodiment which is a wide area IPL device for external use. Figures 1-3 (and the description at column 5, line 9 to column 11, line 42) merely describe a lamp that is not water cooled. Eckhouse teaches that filters for that lamp may include optical and neutral density filters, which may include bandwidth filters and low cut off filters in the visible and UV regions of the spectrum. However, there is no disclosure of water as a filter for the specific wavelengths which would be absorbed by water in the skin causing unwanted heating.

Eckhouse also describes, with references to Figure 4, a device for use in invasive treatments in which the light output is coupled to an optical fiber. In connection with that device, Eckhouse teaches that the volume between the reflector and the optical fiber can be filled with water, mainly for optical coupling but in part for cooling the flash lamp where a high pulse rate is warranted. However, Eckhouse fails to teach or suggest that the water acts as a filter.

The device of Figure 4 comprises a housing for a flash tube into which protrudes the end of an optical fibre, through which light is to be conducted to the body under treatment. Column 10, lines 4-14, discloses that water may be present filling the housing between the reflector and the optical fibre. However, the water is included to provide cooling. In relation to Figure 4, there is no teaching or suggestion of including a UV cut off filter or any filter.

Moreover, there is no teaching or suggestion that water should be introduced into the embodiment of Figures 1 and 2; further, introducing water would be impossible because there is no closed housing present, which could contain it. Moreover, the embodiment associated with Figures 1 and 2 does not have the optical filter and the housing has an open iris.

Still other embodiments are described in connection with Figures 14-16. However, these non-invasive embodiments featuring light guides, and various filtering options do not include the use of water (as a filter or surrounding the flash lamp).

Thus, although Eckhouse discloses various filter arrangements, none of them consists simply of a UV cut off filter to be used in the Figure 4 apparatus. Therefore, Eckhouse fails to disclose, teach or suggest the specific combination of water with a UV cut off filter as recited in claim 1 and its dependent claims.

Therefore, Eckhouse fails to disclose, teach or suggest "a filter system for filtering undesired light output wavelengths from said pulse to produce a filtered light pulse for application to said body, at least part of said filter system being interposed between said light source and said aperture, wherein said filter system consists of (a) a filter for filtering out UV and near UV wavelengths shorter than 510 nm and for passing longer wavelengths and (b) water, said water being located in the apparatus for filtering out undesired skin heating wavelengths of light which would otherwise pass to said output aperture, wherein said filtered light pulse has an energy of at least 250 J/cm2/sec," as recited in independent claim 1 and its dependent claims.

Gustaffson

Gustaffson fails to remedy the above-identified deficiency of Eckhouse. Gustaffson merely discloses a low cost, prior art device for treating of superficial afflictions using a directed light beam produced by a non-coherent light source.

Moreover, contrary to the assertions of the Office Action, Gustafsson fails to teach or suggest the claimed flow path for the water. If one of ordinary skill in the art would have adopted the flow path as in Gustafsson, the water would not function as an optical filter for the light output. This is because the water is not interposed in a light path from the lamp to the outside world. In Gustafsson, the light emitted by the lamp is stopped by the fluorophore and is re-emitted along a new path to exit via the optical fibre.

Therefore, the combined teachings of Eckhouse and Gustaffson fail to teach or suggest the claimed invention including the claimed filter system, at least part of said filter system being interposed between said light source and said aperture, as recited in independent claim 1 and its dependent claims.

Anderson

Anderson fails to remedy the above-identified deficiencies of Eckhouse and Gustaffson. Anderson merely discloses a method and apparatus for the simultaneous removal

of hairs from a skin region by placing an applicator in contact with the skin surface in the skin region and applying optical radiation of a selected wavelength and of a selected flux through the applicator to the skin region for a predetermined time interval. The Anderson technique also involves cooling the skin surface in the skin region to a selected depth during the applying of optical radiation to the skin region and/or prior thereto, which allows the papilla of the hair follicles to be significantly heated without damage to the skin surface in the skin region up to the selected depth.

The Anderson applicator is utilized to cool the skin surface in the skin region to the selected depth and the selected depth is preferably at least equal to the depth of the epidermis layer of the skin (i.e. the layer of the skin closest to the skin surface). The cooling by the applicator may for example be accomplished by cooling at least the surface of the applicator in contact with the skin surface, such cooling preferably being accomplished both before and during the irradiation of the skin. The cooling of the applicator is accomplished by passing a cooling fluid through the applicator.

However, the combined teachings of Eckhouse and Gustaffson and Anderson fail to teach or suggest the claimed invention including the claimed filter system, at least part of said filter system being interposed between said light source and said aperture, as recited in independent claim 1 and its dependent claims.

Optoelectronics

Optoelectronics fails to remedy the above-identified deficiencies of Eckhouse, Gustaffson and Anderson. Optoelectronics merely discloses particulars of power supply construction.

Therefore, the combined teachings of Eckhouse, Gustaffson, Anderson and Optoelectronics fail to teach or suggest the claimed invention including the claimed filter system, at least part of said filter system being interposed between said light source and said aperture, as recited in independent claim 1 and its dependent claims.

Vassiliadis

Vassiliadis fails to remedy the above-identified deficiencies of Eckhouse, Gustaffson, Anderson and Optoelectronics. Vassiliadis merely discloses the use of interlocks on filters

Therefore, the combined teachings of Eckhouse, Gustaffson, Anderson, Optoelectronics and Vassiliadis fail to teach or suggest the claimed invention including the claimed filter system, at least part of said filter system being interposed between said light source and said aperture, as recited in independent claim 1 and its dependent claims.

As a result, all pending claims are allowable over the cited prior art references.

Lack of Motivation to Combine References

The Office Action asserted that it would have been obvious to use the cooling system of Gustafsson in a device according to Eckhouse. However, the Office Action's assertion that one of ordinary skill in the art would have been motivated to combine these references is completely insufficient to support a *prima facie* case of obviousness. As a result, the 103 rejections based on the cited prior art references are traversed for that additional reason.

The requisite standard for motivation to combine references requires a showing that one of ordinary skill in the art would have been motivated to combine the references not that they may have combined the references. Under MPEP 2143, to establish a *prima facie* case of obviousness, three basic criteria must be met. Primarily, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

One of ordinary skill in the art would not have looked to Gustafsson for the reason hypothesized by the Office Action. The Office Action asserted that it would have been obvious to employ the water cooling of Gustafsson in a device of Eckhouse, because this 'makes the lamp much more effective'. However, that is not a teaching of Gustafsson. In fact, Gustafsson fails to teach or suggest that water cooling makes lamps more effective. Rather, Gustafsson teaches that the whole construction of the embodiment of Figure 2 of Gustafsson makes the illustrated device more effective than that of Figure 1. The water cooling is not what is taught to improve efficiency; rather, the Gustafsson teaches that the entire set of constructional differences between the two embodiments is what improves efficiency. In fact, the main difference between Figures 1 and 2 of Gustafsson is not the cooling, but rather the use of a dye in circuit 7 to convert the light output to a single wavelength. This is explained clearly to be what makes the lamp of Figure 2 more effective.

Furthermore, the Office Action has overstated the message that one of ordinary skill in the art would have derived from Eckhouse. In fact, the teaching regarding any cooling

function of water in relation to the device of Figure 4 is rather incidental. The real importance of the water is to couple the light of the lamp to the optical fibre end. Thus it is stated that:

> *'The presence of a fluid reduces the losses that are associated with glass to air transitions...If a fluid is used in the reflector volume, then its refractive index can be chosen such that all the rays trapped in the conical section are also trapped in the fiber...'*

Water is suggested by Eckhouse to have a useful cooling function on *'if high repetition rate pulses are used'*. However, high repetition rates are not used in the apparatuses of the kind described by Eckhouse or the Applicant in relation to skin treatment embodiments. To the contrary, skin treatments do not require fast repetition of pulses; once a pulse has been applied to one area of skin, the clinician or operator moves the device to another area. Therefore, in skin treatment regiments, there is ample time for cooling.

Moreover, whereas in Gustafsson and Eckhouse Figure 4, the lamps and their cooling system are in a large fixed unit and light is conducted to the patient via a fibre, this is not the case in those embodiments of Eckhouse for which UV cut off filtering is taught to be appropriate. Thus, the devices of Figures 1 and 2 and 14-16 have the lamp in an applicator which is directly applied to the patient's skin. Column 8, line 44, recommends that the applicator should be a lightweight unit. A skilled worker would, therefore, need a strong motivation to try to incorporate water cooling into such a hand held device.

This motivation is lacking as Eckhouse does not suggest that cooling is a useful gain from the use of water in the embodiment of Figure 4, except where a high pulse repetition rate is needed. No such high pulse repetition rate is indicated to be required in connection with the embodiments featuring the UV cut off filter. Therefore, a skilled worker would not have been motivated to combine the features of the embodiments of Eckhouse, which have a UV cut off filter with either the use of water for cooling shown in connection with Figure 4 or the water cooling of Gustafsson.

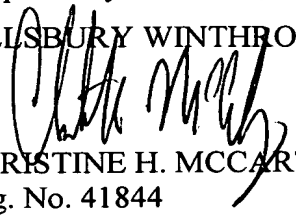
Accordingly, one of ordinary skill in the art would not have been motivated to combine the configurations of Eckhouse and Gustafsson. Therefore, the prior art rejections based on Eckhouse and Gustafsson are traversed as failing to be based on a *prima facie* case of obvious.

As a result, all pending claims are allowable over the cited prior art references.

All rejections and objections have been addressed. It is respectfully submitted that the present application is now in condition for allowance, and a notice to that effect is earnestly solicited. Should there be any questions or concerns regarding this application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,
PILLSBURY WINTHROP LLP



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